WIPO STANDARD ST. XX

RECOMMENDATIONS ON DIGITAL THREE-DIMENSIONAL (3D) MODELS AND 3D IMAGES

Working Draft

Editorial Note prepared by the International Bureau

This Working Draft is prepared by the 3D Task Force and shared at CWS/8 for information only in English. This Draft will be further updated by the Task Force and a final draft submitted for consideration at the next session of the CWS.

INTRODUCTION

1.   These recommendations are intended to be used as a guidance for Intellectual Property Offices (IPOs) and other Organizations that manage, store, process, exchange, or disseminate IP data using 3D models and images.

OBJECTIVES

2.   These recommendations are focused on the following objectives:

(a)   Determining formats that are available and compatible/interoperable with different software used by applicants, in order to facilitate applicants' efforts to prepare application materials before filing;

(b)   Reducing the time of application processing by IPOs;

(c)   Facilitating application filing to different IPOs due to adoption of recommended formats among IPOs;

(d)   Harmonizing requirements for data exchange on objects for IP rights protection, with three-dimensional visual representations, among IPOs and other organizations; and

(e)   Determining a set of requirements for the publication of information on objects for IP rights protection with three-dimensional visual representations.

DEFINITIONS

3.   For the purposes of these recommendations, unless otherwise specified:

(a)   3D Model – An electronic file that is created by specialized software, for mathematically representing the surface of an object in three dimensions;

(b)   3D Images – Images that represent objects displayed in three dimensions (length, depth, height), e.g. 3Dphotos, stereoscopy, etc.;

(c)   CAD – computer aided design;

(d)   3D PDF – a PDF document that contains 3D models;

(e)   IGES – Initial Graphics Exchange Specification;

(f)   OBJ – An open geometry vertex file format used for CAD and 3D printing;

(g)   MOL – A text-based chemical file format that describes molecules and chemical reactions;

(h)   PRC – a 3D file format that can be used to embed 3D data in a PDF file;

(i)   PDF – The Portable Document Format, a file format standardized by ISO;

(j)   3DS – A file format used by the Autodesk 3ds Max 3D modeling, animation and rendering software;

(k)   DWF – Design Web Format;

(l)   DWG – A file format widely used for CAD drawings;

(m)   Raster Image – An image that is composed of a map of points (pixels), referred to as a bitmap. Typical file formats for raster images include JPEG, TIFF, PNG and BMP;

(n)   STL – Standard Tessellation Language - a file format native to the stereolithography CAD software created by 3D Systems;

(o)   STEP – Standard for the Exchange of Product model data – an open ISO Standard which can represent 3Dobjects in Computer-aided design (CAD) and related information;

(p)   U3D –Universal 3D (U3D) is a compressed file format standard for 3D computer graphics data;

(q) Vector Graphics – An image file that is composed of shapes formed of mathematical formulas and coordinates on a 2D plane. As opposed to raster images, vector graphics have the property of scaling infinitely without any degradation of quality; and

(r) X3D – Successor of VRML, an Open ISO Standard XML format.

REFERENCES

4.   The following WIPO and ISO Standards should be applied in respect to these recommendations:

–   WIPO Standard ST.9   Bibliographic data on and relating to patents and SPCs;

–   WIPO Standard ST.10 Published patent documents;

–   WIPO Standard ST.60 Bibliographic data relating to marks;

–   WIPO Standard ST.63 Content and layout of trademark gazettes;

–   WIPO Standard ST.80 Bibliographic data relating to industrial designs;

–   WIPO Standard ST.81 Content and layout of industrial designs gazettes;

–   WIPO Standard ST.96 Processing of Industrial Property information using XML;

–   ISO Standard 14739-1 3D use of Product Representation Compact (PRC) format; and

–   ISO Standard 10303   Product data representation and exchange standard.

GENERAL RECOMMENDATIONS

5.   An application for registration of an object for IP Rights protection may contain a three-dimensional (3D) visual representation of the object in the form of a 3D model or 3D image, in accordance with the requirements of the IPO receiving the application. Applicants may be encouraged to provide 3D visual representation of the object for IPR protection as supplementary material to the application, or as the main visual representation of the object for IPR protection, if so specified by the requirements of the receiving office.

6.   Formats and other characteristics of the received image files (e.g. file-size) accepted by each IPO as per this Standard should be recommended.

7.   If an IPO has previously established its preferred image formats and other characteristics, it is recommended that the IPO announce in its official publications at regular intervals and/or on its websites, the image formats, sizes and other specific characteristics that are acceptable to the IPO.

RECOMMENDATIONS FOR 3D MODELS AND 3D IMAGES FORMATS AND FILE-SIZE

8.   Recommendations for providing materials of application for patent for an invention or utility model with its three-dimensional visual representation (except visual representations of chemical structures):

–   Three-dimensional visual representation of an invention or utility model should preferably be formatted as STEP, IGES, U3D, PRC, OBJ or STL; and

–   Maximum file-size should not exceed 50 MB. If required, at an applicant`s request, an IPO can accept files larger than the said maximum.

9.   Recommendations for providing application materials for a patent for an invention in chemistry with its three-dimensional visual representation:

–   Three-dimensional visual representation of an invention in chemistry should preferably be formatted as CDX or MOL.

10.   Recommendations for providing application materials for an industrial design with its three-dimensional visual representation:

–   Three-dimensional visual representation of an industrial design should preferably be formatted as STEP, IGES, U3D, PRC, OBJ or STL; and

–   Maximum file-size should not exceed 50 MB. If required, at an applicant's request, an IPO can accept files larger than the said maximum.

11.   Recommendations for providing application materials for a trademark with its three-dimensional visual representation:

–   Three-dimensional visual representation of a trademark should preferably be formatted as STEP, IGES, U3D, PRC, OBJ or STL; and

– Maximum file-size should not exceed 50 MB. If required, at an applicant`s request, an IPO can accept files larger than the said maximum.

12.   Recommendations for providing application materials for an integrated circuit topography with its three-dimensional visual representation:

– Three-dimensional visual representation of an integrated circuit topography should preferably be formatted as STEP, IGES, U3D, PRC, OBJ or STL; and

– Maximum file-size should not exceed 50 MB.

PROCEDURAL RECOMMENDATIONS FOR FILING AND PROCESSING OF 3D MODELS AND 3D IMAGES

13.   In the case where an IPO converts a 3D model or 3D image from formats originally submitted by applicants to formats other than those recommended above, or transforms from one storage format to another (e.g. STEP to STL), it is recommended that the IPO retain the original format as well as the transformed format.

14.   If an IPO receives a 3D model as the only visual representation of an object for IPR protection, it is recommended to make 2D views of the model in order to ensure compatibility with systems and processes where only two-dimensional images of IP objects are presented.

15.   For patent applications for inventions or utility models, in such cases it is recommended to make seven 2D views of the 3D model (front, rear, right, left, top, bottom, and perspective views) in an electronic format corresponding to the requirements for 2D images of inventions or utility models, as established by an IPO.

16.   For patent applications for industrial designs, in such cases it is recommended to make seven 2D views of the 3D model (front, rear, right, left, top, bottom, and perspective views) in an electronic format corresponding to the requirements for 2D images of industrial designs, as established by an IPO.

17.   For trademark applications, in such cases it is recommended to make one 2D view of the 3D model (front view) in an electronic format corresponding to the requirements for 2D images of figurative trademarks, as established by the IPO.

18.   It is recommended that an IPO defines a set of guidelines and procedures for converting formats.

RECOMMENDATIONS FOR DATA EXCHANGE

19.   File formats for data exchange can be converted from the original formats, if such is established by an IPO. The conversion or transformation from the original file formats should be conducted in accordance with the guidelines and procedures established by an IPO.

20.   Recommendations for data exchange among IPOs and other organizations on 3D visual representations of objects in applications for patents for inventions or utility models (except visualizations of chemical structures):

– File formats: U3D, PRC, OBJ or STL, STEP, IGES…; and

– Maximum file-size: 50 MB

21.   Recommendations for data exchange among IPOs and other organizations on 3D visual representations of objects in applications for patents for chemical inventions:

– File format: MOL, CDX.

22.   Recommendations for data exchange among IPOs and other organizations on 3D visual representations of objects in applications for patents for industrial designs:

– File formats: U3D, PRC, OBJ or STL, STEP, IGES …; and

– Maximum file-size: 50 MB.

23.   Recommendations for data exchange among IPOs and other organizations on 3D visual representations of objects in applications for trademarks:

– File formats: U3D, PRC, OBJ or STL, STEP, IGES…; and

– Maximum file-size: 50 MB.

RECOMMENDATIONS FOR PUBLICATION (ONLINE DISPLAY)

24.   It is recommended that an electronic publication of an object for IPR protection should contain files received by an IPO and these should be included in the list of published documents relating to the object for IPR protection.

25.   Formats of published 3D files can be converted from the original formats, if such is established by an IPO. Any conversions or transformations should be conducted in accordance with the guidelines and procedures, as established by the IPO.

26.   For online display of 3D visual representation of an object for IPR protection the following is recommended:

–   File formats: U3D, PRC, OBJ or STL, …; and

–   Maximum file-size: 50 MB.

27.   For electronic publication of 3D visual representation of an object for IPR protection in PDF format it is recommended to create files in 3D PDF, embedding the above-mentioned 3D file formats. If the original 3D model couldn't be embedded in 3D PDF format it is recommended:

–   to convert the 3D model to the one of the above-mentioned 3D file formats suitable for the creation of a 3D PDF; and

–   or to embed 2D image(s) of an object for IPR protection, received from an applicant, or converted by an IPO from 3D formats as submitted by an applicant.

28.   Paper publication should contain a flat 2D visual representation of an object for IPR protection, received from an applicant ,or converted by an IPO from 3D formats submitted by an applicant.

RECOMMENDATIONS FOR PARTIAL CLAIMING, PARTIAL DESIGN, PORTION DESIGN

29.   To be added